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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,406	03/21/2001	Hans Hannu	34645-00522USPT	4093

7590 08/03/2004

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EXAMINER

GEREZGIHER, YEMANE M

ART UNIT	PAPER NUMBER
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2144

DATE MAILED: 08/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/814,406

Applicant(s)

HANNU ET AL.

Examiner

Yemane M Gerezgiher

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>02/2002 & 09/2000</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This application has been examined. Claims 1-41 are pending.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1, 2, 11 and 12 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of copending Application No. **09/814434**. Although the conflicting claims are not identical, they are not patentably distinct from each other because the only difference between the two pending applications is a minor wording variation and other minor differences, which do not change the scope of the invention whatsoever.

Pending Application # 09/814406	Pending Application # 09/814434
<p>1. A communication entity for compressing messages transmitted using a communication protocol, said communication entity comprising: →</p> <p style="padding-left: 40px;">a dictionary containing at least one symbol string therein, said at least one symbol string corresponding to at least one symbol of a given communication protocol; and</p> <p style="padding-left: 40px;">a compressor in communication with said dictionary, said compressor using said dictionary to compress said at least one symbol string within a first communication message pursuant to said given communication protocol.</p> <p>2. The communication entity of claim 1, said communication entity further comprising: a decompressor in communication with said dictionary, said decompressor using said dictionary to decompress at least one symbol string within a second communication message pursuant to said given communication protocol.</p>	<p>1. A communication entity for facilitating compressed message communication, said communication entity comprising:</p> <p style="padding-left: 40px;">→ a context table containing context information associated with at least one communication message;</p> <p style="padding-left: 40px;">→ a compressor, in communication with said context table, said compressor using said context information to compress at least one transmitted communication message; and</p> <p style="padding-left: 40px;">→ a decompressor, in communication with said context table, said decompressor using said context information to decompress at least one received communication message.</p>
<p>11. A communication entity for decompressing messages received using a communication protocol, said communication entity comprising:</p> <p style="padding-left: 40px;">→ a dictionary containing at least one symbol string therein, said at least one symbol string corresponding to at least one symbol of a given communication protocol; and</p>	<p>1. A communication entity for facilitating compressed message communication, said communication entity comprising:</p> <p style="padding-left: 40px;">→ a context table containing context information associated with at least one communication message;</p>

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<p>a decompressor in communication with said dictionary, said decompressor using said dictionary to decompress said at least one symbol string within a first communication message pursuant to said given communication protocol.</p> <p>12. The communication entity of claim 11, said communication entity further comprising: a compressor in communication with said dictionary, said compressor using said dictionary to compress at least one symbol string within a second communication message pursuant to said given communication protocol.</p>	<p>a compressor, in communication with said context table, said compressor using said context information to compress at least one transmitted communication message; and</p> <p>a decompressor, in communication with said context table, said decompressor using said context information to decompress at least one received communication message.</p>
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Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-7, 11-17, 21-23, 26, 27, 29, 30, 33, 34, 36, 37, 39 and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Booth (U.S. Patent Number 6,345,307).

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As per claim 1, Booth disclosed a method and apparatus for compressing Hyper text Transfer Protocol (HTTP) messages where the HTTP elements were compressed by the compressor (*a compressor in communication with said dictionary, said compressor using said dictionary to compress said at least one symbol string within a first communication message pursuant to said given communication protocol*) communicating with a lookup table/ dictionary (*a dictionary containing at least one symbol string therein, said at least one symbol string corresponding to at least one symbol of a given communication protocol*) See ABSTRACT, Figure 2, Column 3, Lines 13-67, Column 4, Line 23 through Column 6, Line 40 and Column 10, Line 62 through Column 12, Line 11.

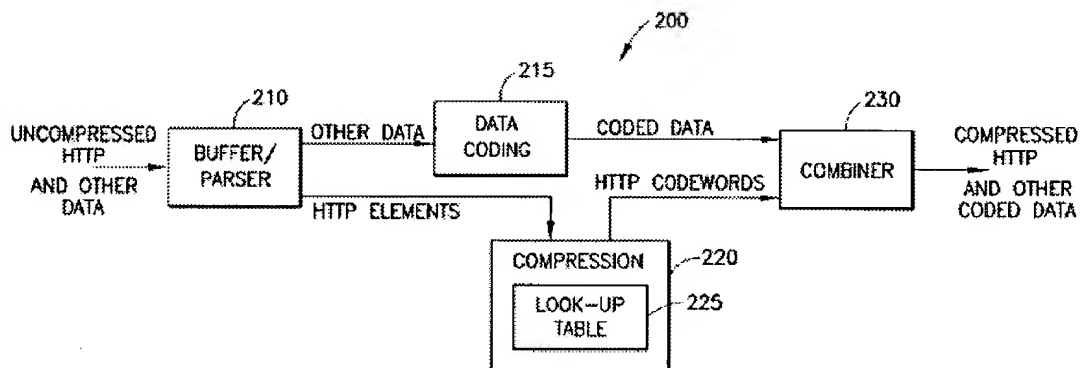


FIG.2

As per claim 11, Booth disclosed a method and apparatus for compressing Hyper text Transfer Protocol (HTTP) messages where the HTTP elements were decompressed by the decompressor (*a decompressor in communication with said dictionary, said decompressor using said dictionary to decompress said at least one*

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symbol string within a first communication message pursuant to said given communication protocol) communicating with a lookup table/ dictionary (a dictionary containing at least one symbol string therein, said at least one symbol string corresponding to at least one symbol of a given communication protocol) See ABSTRACT, Figure 3, Column 3, Lines 13-67, Column 7, Line 20 through Column 8, Line 20 and Column 12, Lines 12-60.

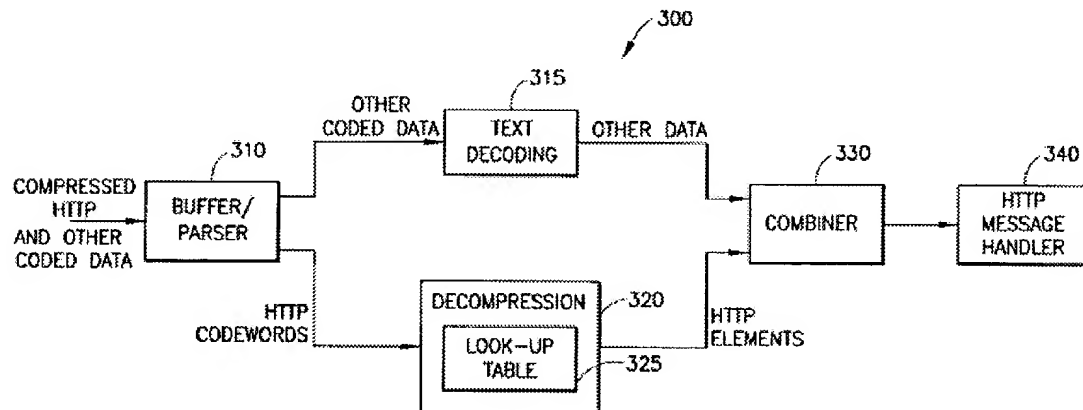


FIG.3

As per claim 21, Booth disclosed a communication terminals/entities a *first communication entity* (content server) for sending a first communication message, (See Figure 1 and Column 9, Lines 6-10) *said first communication entity comprising: a first dictionary* (first lookup table, See Figure 2 where the lookup table containing at least one symbol string therein, said at least one symbol string corresponding to at least one symbol of a given communication protocol; (See First lookup table/dictionary in Column

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6, Lines 1-39) and a first compressor in communication with said first dictionary, said first compressor using said first dictionary to compress a given symbol string within a first communication message pursuant to said given communication protocol; (See Figure 2, Column 3, Lines 13-67, Column 4, Line 23 through Column 6, Line 40 and Column 10, Line 62 through Column 12, Line 11) and a second communication entity, (a client terminal, See Figure 1 and Column 9, Lines 6-10) in communication with said first communication entity, for receiving said first communication message, said second communication entity comprising: a second dictionary containing at least one symbol string therein, (second lookup table/dictionary in communication with the decompressor, See Column Figure 3) said at least one symbol string corresponding to said at least one symbol of said given communication protocol; and a first decompressor, in communication with said second dictionary, said first decompressor using said second dictionary to decompress said given symbol string within said first communication message pursuant to said given communication protocol. See Column 3, Lines 13-67, Column 7, Line 20 through Column 8, Line 20 and Column 12, Lines 12-60. said first dictionary being substantially equivalent to said second dictionary. See Column 6, Lines 1-40 and Column 7, Line 20 through Column 8, Line 20.

As per claim 33, Booth disclosed receiving a compressed message according to a communication protocol where the protocol may be any protocol including HTTP and a decompressor *matching at least one symbol string within a first communication message to at least one matched symbol string within a first dictionary*; See Figure 3, Column 12, Lines 16-26 ("Here, the compressed HTTP and other coded data, if present,

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are received at a buffer/parser. The coded data is provided to a decoding function to recover the other data (e.g., text or graphics), which is then provided to a combiner. The HTTP codewords are provided to a decompression function. A look-up table at the decompression function associates an HTTP data element with each received codeword.”) Booth further disclosed *transmitting reference information indicative of a location of said at least one matched symbol string within said first dictionary* where “the corresponding elements are output to the combiner 330 to form the uncompressed HTTP data and other data.” (See Column 12, Lines 24-26). Booth disclosed receiving HTTP codewords that were pinpointing the location of a matched symbol and associating the received codeword with the matched symbol string and reconstructing the HTTP elements at the receiving entity. See Figure 3 and Column 7, Line 20 through Column 8, Line 20.

As per claim 36, Booth disclosed a method of *searching a dictionary for a symbol string corresponding to said communication protocol, said symbol string being contained within a communication message*; See Figure 2 (HTTP Elements contained in the communication message been received for transmission to another receiving terminal. The received HTTP elements, are searched in the lookup table) and *upon affirmative confirmation that said dictionary contains said symbol string, retrieving from said dictionary a compressed symbol string associated with said symbol string and replacing, in said communication message, said symbol string with said compressed symbol string; and transmitting said communication message using said communication protocol*. See Figure 2 and Column 11, Lines 14-33 (Once the communication message

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"HTTP element" was searched in the static lookup table (claim 37, See Column 6, Lines 1-40) and matched, the compressed references of the message "compressed symbol strings" replaced the communication message. "The HTTP data elements, which can comprise a line of the HTTP message, or a field (such as a method field, URL field, or version field) or other code or message (such as a status code or status message) within a line, and so forth, are parsed and provided to a compression function, which optionally has a look-up table that can be implemented using known techniques. The look-up table associates a codeword with each HTTP data element.")

As per claim 39, Booth disclosed *receiving a communication message based upon said communication protocol, said communication message including a compressed symbol string; retrieving from a dictionary, an uncompressed symbol string associated with said compressed symbol string, said uncompressed symbol string corresponding to said communication protocol; and replacing, in said communication message, said compressed symbol string with said uncompressed symbol string.* See Figure 3, Column 3, Lines 13-67, Column 7, Line 20 through Column 8, Line 20 and Column 12, Lines 12-60. Booth disclosed receiving a compressed communication message "CodeWords" related to the communication protocol (HTTP) and searched on the lookup table for the uncompressed HTTP elements contained in the static lookup table (claim 40, See Column 6, Lines 1-39) that were associated with the compressed codes of the HTTP related compressed messages.

As per claims 2 and 12, Booth disclosed *a decompressor in communication with said dictionary, said decompressor using said dictionary to decompress at least one*

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symbol string within a second communication message pursuant to said given communication protocol. See Figure 1 and 3. (Booth disclosed a communication terminal/device comprising a decompressor using a lookup table to decompress compressed HTTP based messages).

As per claims 3-6 and 13-16, Booth disclosed that a binary code tree based "known compression techniques, such as the Lempel-Ziv algorithm and Huffman coding, can be used with the compressed HTTP data output from the combiner, or for the coded data alone or the HTTP codewords alone. Moreover, associated video/audio data may be compressed using known techniques" where the Huffman coding inherently disclosed *a binary code tree. See Column 12, Lines 6-11.*

As per claim 7 and 17, Booth disclosed that the *symbol of said given communication protocol comprises at least one field-name of said given communication protocol. See Column 5, Lines 10-20* ("a request message can have many more lines, or as little as one line. The first line is the request line, while the subsequent lines are header lines. The request line has three fields, namely a method field, a URL field, and an HTTP version field. The method field can have different values, e.g., GET, POST, and HEAD. The GET method is most common, and is used when the browser requests an object, with the object identified in the URL field. In this example, the browser is requesting the object *"/somedir/page.html"*").

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 8-10, 18-20, 35, 38 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Booth (U.S. Patent Number 6,345,307) in view of AAPA (Applicant Admitted Prior Art) hereinafter referred to as AAPA.

With respect to the claim rejections applied to claims 1 and 11 above, Booth substantially disclosed the invention as claimed. However, Booth was silent about a dynamic dictionary in communication with the compressor/decompressor and a compressor using a sliding window dictionary compression method.

However, as evidenced by the inventive entity/entities, a dictionary based compression/decompression where the dictionary could be either static or dynamic and using a sliding window technique was well known in the art at the time the invention was made. The AAPA reads as follows:

Dictionary compression schemes may be generally categorized as either static or dynamic. A static dictionary is a predefined dictionary, which is constructed before compression occurs, and which does not change during the compression process Static dictionaries are typically either stored in the compressor and decompressor prior to use, or

transmitted and stored in memory prior to the start of compression operations.

A dynamic or adaptive dictionary scheme, on the other hand, allows the contents of the dictionary to change as compression occurs. In general a dynamic dictionary scheme starts out with either no dictionary or a default, predefined dictionary and adds new strings to the dictionary during the compression process. If a string of input data is not found in the dictionary, the string is added to the dictionary in a new position and assigned a new index value. The new string is transmitted to the decompressor so that it can be added to the dictionary of the decompressor. The position of the new string does not have to be transmitted, as the decompressor will recognize that a new string has been received, and will add the string to the decompressor dictionary in the same position in which it was added in the compressor dictionary. In this way, a future occurrence of the string in the input data can be compressed using the updated dictionary. As a result, the dictionaries at the compressor and decompressor are constructed and updated dynamically as compression occurs.

One method of dictionary compression is of the type known as sliding window compression. In this method the compressor moves a fixed-size sliding window from left to right through the file during compression. The compression algorithm searches the file to the left of the window for matches to strings currently in the window. If a match is found the string is replaced by a reference to the location of the match within the file along with a reference to the length of the match. Alternately, the window may consist of a text window consisting of a large block of recently decoded text and a look-ahead buffer. In this version, the look-ahead buffer is used to search for matches within the text window. If a match is found the string is replaced by a reference to the location of the

match within the text window and reference to the length of the match. This information is used by the decompressor which maintains the same dictionary to reproduce the original information.

Another method for the compression of data is the use of a binary code tree. In a binary code tree, symbols or strings which are to be compressed are represented in a tree structure by a variable number of bits such that each symbol is uniquely decodable. Typically, symbols with higher probabilities of occurrence in the input data are represented by a shorter number of bits than those which have lower probabilities of occurrence. In the construction of the binary code tree, individual symbols are laid out as a string of leaf nodes connected to a binary tree. Symbols with higher probabilities of occurrence are represented as shorter branches of the tree resulting in a fewer number of bits being required to represent them. Conversely, symbols with lower probabilities of occurrence are represented as longer branches of the tree requiring a greater number of representation bits. When a string of input data matches a symbol in the binary code tree of the compressor, the code of the symbol is transmitted instead of the symbol itself resulting in data compression. A decompressor receiving the code reconstructs the original symbol or string using an identical binary code tree.

Similarly to dictionary compression, binary code trees may be static or dynamic. In a static binary code tree scheme, a predefined binary code tree is constructed prior to compression and does not change during the compression process. As with static dictionaries, static binary code trees may be stored in the compressor and decompressor in advance, or transmitted and stored prior to the start of compression. See Specification Page 7, Line 6 through Page 11, Line 21.

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Thus, it is respectfully submitted that it would have been obvious to one of ordinary skill in the art at the time the invention was made to take the AAPA related to a dynamic dictionary in communication with the compressor/decompressor and a compressor using a sliding window dictionary compression method and have modified the teachings of Booth related to compressing a communication protocol related element (TCP/IP and explicitly HTTP related elements) because the use of "a dynamic or adaptive binary code tree allows for the addition of new symbols or strings to the code tree during the compression process." See Specification Page 8, Lines 12-14 and Page 11, Lines 14-16.

8. Claims 24, 25, 28, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Booth (U.S. Patent Number 6,345,307) in view of what would have been obvious to one of ordinary skill in the art at the time the invention was made.

Booth substantially disclosed the invention as claimed. However, Booth was silent about the use of more than two (third and forth) dictionaries. However, Examiner takes Official Notice (see MPEP § 2144.03) that "using multiple dictionaries in compressing/decompressing data in the communication network" in a computer networking environment was well known in the art at the time the invention was made. For example, Martin (U.S. Patent Number 6,222,942) disclosed compression and decompression scheme using more than two "dictionaries are compiled then consists, for example, in placing the 8 most frequently used words in a first dictionary whose ranks are binary encoded using 3 bits, in placing the following 64 words (in order of

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decreasing frequency of use) in a second dictionary whose ranks are binary encoded using 6 bits, and in placing the other words, e.g. of which there are 1,024, in a third dictionary whose ranks are binary encoded using 10 bits." (See Column 3, Lines 20-27 and Figure 3). Further Reynar et al. (U.S. Patent Number 5,951,623) disclosed a modification to Lempel- Ziv data compression technique by using pluralities of dictionaries. See ABSTRACT, Column 17, Line 61 through Column 18, Line 21 and Column 20, Lines 5-26. The Applicant is entitled to traverse any/all official notice taken in this action according to MPEP § 2144.03. However, MPEP § 2144.03 further states "See also In re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971) (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice)." Specifically, In re Boon, 169 USPQ 231, 234 states "as we held in Ahlert, an applicant must be given the opportunity to challenge either the correctness of the fact asserted or the notoriety or reputation of the reference cited in support of the assertion. We did not mean to imply by this statement that a bald challenge, with nothing more, would be all that was needed". Further note that 37 CFR § 1.671(c)(3) states "Judicial notice means official notice". Thus, a traversal by the Applicant that is merely "a bald challenge, with nothing more" will be given very little weight.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to take the commonly used teachings related to the use of multiple dictionaries in data compression/decompression and have modified the teachings of Booth related to compressing a communication protocol related element (HTTP related

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elements) to incorporate the use of multiple tables/dictionaries in order to facilitate data compression/decompression by storing a compressed code representations of the symbols/characters or the stings according to tier ranks. (See Martin's ABSTRACT).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

- a. Hamiti, Shkumbin et al. (US 6751209 B1) entitled: Header compression in real time service
- b. Huffman, John C. (US 6553141 B1) entitled: Methods and apparatus for compression of transform data
- c. Buchholz, Dale Robert et al. (US 6493766 B1) entitled: Method, client device, server and article of manufacture for compressing universal resource identifiers using left/right string substitution
- d. Cooper, Albert B. (US 6359548 B1) entitled: Data compression and decompression method and apparatus with embedded filtering of infrequently encountered strings
- e. Saperov, Anatoly Grigorjevich et al. (US 6256652 B1) entitled: Binary code compression and decompression and parallel compression and decompression processor

- f. Welch, deceased, Terry A. et al. (US 6121901 A) entitled: Data compression and decompression system with immediate dictionary updating interleaved with string search
- g. Heath, Robert Jeff (US 5973630 A) entitled: Data compression for use with a communications channel
- h. Buchholz, Dale Robert et al. (US 5956490 A) entitled: Method, client device, server and computer readable medium for specifying and negotiating compression of uniform resource identifiers
- i. Domyo, Seiichi et al. (US 5872530 A) entitled: Method of and apparatus for compressing and decompressing data and data processing apparatus and network system using the same
- j. Denenberg, Jeffrey N. et al. (US 5537551 A) entitled: Data compression method for use in a computerized informational and transactional network

FOREIGN PATENT DOCUMENTS

- k. Smith, Rodney John (WO 9839723 A2) entitled: Improvements relating to data compression
- l. Burke, T M et al. (GB 2320657 A) entitled: Wireless audio and video conferencing apparatus - includes processor, coupled to network interface, modulator, demodulator and user interface, which performs compression, decompression and protocol encoding and decoding

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10. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Yemane Gerezgiher whose telephone number is 703-305-4874. The examiner can normally be reached on Monday- Friday from 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful. The examiner's supervisor, William Cuchlinski, can be reached at (703) 308-3873.

Yemane M. Gerezgiher
TC 2100, AU 2144



WILLIAM A. CUCHLINSKI, JR.
SUPERVISORY PATENT EXAMINER
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